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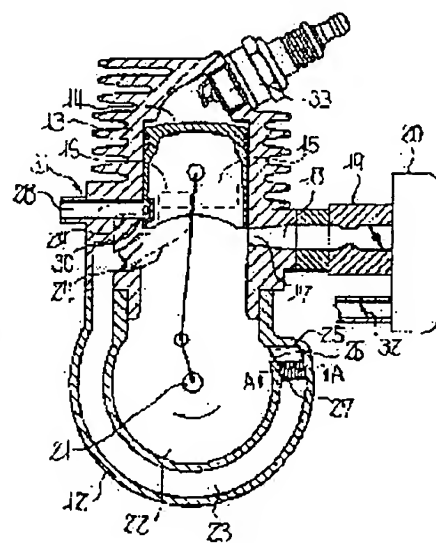
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(54) TWO-CYCLE ENGINE

(57)Abstract:

PURPOSE: To prevent generation of air-fuel mixture blow-by phenomenon at the time of scavenging, improve output and fuel consumption and make exhaust gas clean.

CONSTITUTION: A two-cycle engine is provided with a separate chamber 23, which is communicated with a crank chamber 22 through a passage 25 and of which pressure fluctuates along with the pressure fluctuation inside the crank chamber 22, an air suction passage 31 at a position away from the passage 25 for sucking atmospheric air into the separate chamber 23 when the pressure inside the crank chamber 22 becomes negative, and also a scavenging passage 24 at a position at a distance from the passage 25 for communicating the separate chamber 23 with a scavenging hole 16. At the time of scavenging, air first sucked into the separate chamber 23 is sent to the inside of a cylinder 13 through the scavenging hole 16 and then air-fuel mixture inside the crank chamber 22 is sent from the scavenging hole 16 into the cylinder 13 by passing through the separate chamber 23 and the scavenging passage 24.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention relates to the two-cycle engine of the crank-case compression equation which pressurizes the gaseous mixture inhaled while the gaseous mixture was inhaled into the crank case using the pressure fluctuation in the crank case accompanied by sliding of a piston, and is supplied into a cylinder.

[0002]

[Description of the Prior Art] In the conventional two-cycle engine, the crank-case compression equation mentioned above is common, and explains the structure of the two-cycle engine of this crank-case compression equation, and an operation based on the drawing 4 and the drawing 5.

[0003] First, the cylinder 2 is being fixed to the upper part of a crank case 1, and the two-cycle engine shown in drawing 4 is prepared free [sliding of a piston 3] in the cylinder 2. moreover, the exhaust hole 4 opened and closed when a piston 3 slides on a cylinder 2 and scavenging air -- a hole 5 forms -- having -- scavenging air -- the hole 5 is opened for free passage by the crank case (space section in a crank case 1) 7 through passage 6 the inhalation of air for on the other hand inhaling a gaseous mixture into a crank case 7 to a crank case 1 -- a hole 8 forms -- having -- this inhalation of air -- the inlet valve 11 is formed all over the passage 10 which opens a hole 8 and the carburetor 9 for free passage

[0004] in such a configuration, in the stroke (inhalation and compression stroke) in which a piston 3 goes up, in connection with elevation of a piston 3, the inside of a crank case 7 will be in the negative pressure status, and the inside of a crank case 7 will be in the negative pressure status -- a gaseous mixture -- inhalation of air -- it is inhaled into a crank case 7 from a hole 8 moreover -- if a piston 3 goes up to a predetermined position -- this piston 3 -- scavenging air -- a hole 5 and the exhaust hole 4 stop -- having -- scavenging air -- after stopping a hole 5 and the exhaust hole 4, when a piston 3 goes up succeedingly, the gaseous mixture which is contained in the cylinder 2 is compressed And the gaseous mixture into which it was compressed in the cylinder 2 to the timing to which the piston 3 went up to the abbreviation top dead center explodes, and it moves to the stroke to which a piston 3 downs (as explosion / exhaust air line).

[0005] As explosion / exhaust air line, when a piston 3 downs to a predetermined position, puncturing of an exhaust hole 4 starts, and the combustion gas in a cylinder 2 is discharged into the atmospheric air through a muffler (not shown). after [furthermore,] starting puncturing of an exhaust hole 4 -- scavenging air -- puncturing of a hole 5 starts the gaseous mixture which the gaseous mixture in a crank case 7 was pressurized, and was pressurized while it sets on the other hand as explosion / exhaust air line to which a piston 3 downs and the inlet valve 11 was stopped -- scavenging air -- a hole 5 is punctured -- scavenging air -- it flows into a cylinder 2 from a hole 5, and the operation (scavenging) which extrudes the combustion gas which remains in the cylinder 2 from an exhaust hole 4 is carried out And when moving to the inhalation and the compression stroke to which a piston 3 goes up, the inside of a cylinder 2 is filled with a gaseous mixture.

[0006] although the two-cycle engine shown in drawing 5 is next fundamentally the same as the two-cycle engine shown in drawing 4 -- inhalation of air -- a hole -- 8a forms in a cylinder 2 -- having -- this inhalation of air -- a hole -- an opening-and-closing control of 8a is different at the

point performed with a piston 3

[0007]

[Problem(s) to be Solved by the Invention] the gaseous mixture pressurized in the crank case 7 in the conventional crank-case compression-equation two-cycle engine -- scavenging air -- if it is going to scavenge combustion gas good in order to scavenge the combustion gas which remains in the cylinder 2 by flowing in a cylinder 2 from a hole 5, the so-called blow-by phenomenon in which the gaseous mixture which flowed into the cylinder 2 is discharged in the atmospheric air from an exhaust hole 4 with combustion gas will occur And while HC which is a non-burned component will be contained so much by this blow-by phenomenon in exhaust gas, the amount of the propellant consumed vainly increases according to it.

[0008] Although it can blow on the other hand by bringing forward the hole-closing stage of the exhaust hole 4 by the piston 3 and a phenomenon can be suppressed, the combustion gas which remains in a cylinder 2 in that case increases, the irregular combustion cycle by incomplete combustion, the flame failure, etc. increases, after all, ***** HC increases in exhaust gas and, moreover, there is a fault that an engine output declines.

[0009]

[Means for Solving the Problem] In the two-cycle engine of the crank-case compression equation which pressurizes the gaseous mixture inhaled while invention according to claim 1 inhaled the gaseous mixture into the crank case using the pressure fluctuation in the crank case accompanied by sliding of a piston, and is supplied into a cylinder The another room where a pressure is changed in connection with the pressure fluctuation in the aforementioned crank case while a path is open for free passage into the aforementioned crank case is prepared. when the inside of the aforementioned crank case changes into the negative pressure status, while the air-suction-system way which inhales air is prepared into the aforementioned another room out of the atmospheric air in the position distant from the aforementioned path -- the aforementioned another room and scavenging air -- the scavenge air passage which opens a hole for free passage was established in the position which deserted the aforementioned path

[0010] while invention according to claim 2 makes an opening small in invention according to claim 1 to the timing to which a piston goes up -- the aforementioned piston -- downing -- scavenging air -- the throttle valve which enlarges an opening to the timing by which a hole is punctured, and the timing which gets mixed up was prepared all over the path

[0011] Invention according to claim 3 forms the second airstream way which the first airstream way and end which an end opens for free passage in the atmospheric air and the other end punctures into the aforementioned cylinder in invention according to claim 1 or 2 open for free passage to an air chamber, and the other end punctures into a cylinder in the wall of the aforementioned cylinder. When a piston slid to a predetermined position, the concavity which makes the aforementioned first airstream way and the aforementioned second airstream way open for free passage was formed in the periphery side of the aforementioned piston, and the airstream ON way was formed by these first airstream ways, the second airstream way, and the concavity.

[0012] Invention according to claim 4 prepared the check valve which permits only flowing of the air which goes into another room out of the atmospheric air all over the air-suction-system way in invention according to claim 1 or 2.

[0013] Invention according to claim 5 prepared the straightening vane in the fraction in another room which approached the path at least in invention according to claim 1, 2, 3, or 4.

[0014]

[Function] In invention according to claim 1, if the inside of a crank case will be in the negative pressure status in connection with elevation of a piston, while the another room currently opened for free passage by the path will also be in the negative pressure status and a gaseous mixture will be inhaled into a crank case, into another room, air is inhaled from an air-suction-system way. And when a piston downs in connection with an explosion within a cylinder, these gaseous mixtures and air are pressurized in connection with a down of a piston. while an exhaust hole punctures in connection with a down of a piston and combustion gas is next discharged into the atmospheric air -- scavenging air, although a hole punctures and scavenging air is performed the air first inhaled

and pressurized into another room when this scavenging air was performed -- the inside of a scavenge air passage -- passing -- scavenging air -- while it flows into a cylinder from a hole and the gaseous mixture in a crank case subsequently flows into another room from passage -- the inside of a scavenge air passage -- passing -- scavenging air -- it flows into a cylinder from a hole. Therefore, in connection with scavenging air of combustion gas, the air which flowed into the cylinder previously is discharged from an exhaust hole with combustion gas, and since an exhaust hole is closed to this inflow timing and the timing which gets mixed up when a gaseous mixture flows into a cylinder after air, the blow-by phenomenon in which a gaseous mixture is discharged into the atmospheric air from an exhaust hole does not happen.

[0015] In invention according to claim 2, when it is the timing to which a piston goes up, it is suppressed that the gaseous mixture with which the gaseous mixture from which the opening of a throttle valve flowed into another room in the last stroke while the negative pressure status in a crank case was transmitted to another room by the path for the parvus reason was returned into the crank case, and was filled up into the crank case flows into another room. on the other hand -- a piston -- downing -- scavenging air -- since the opening of a throttle valve becomes large to the timing by which a hole is punctured, and the timing which gets mixed up, pass another room and a scavenge air passage while the gaseous mixture in a crank case flows into another room through a path -- scavenging air -- it flows into a cylinder from a hole

[0016] In invention according to claim 3, when the first airstream way and the second airstream way are opened for free passage by the concavity in connection with a sliding operation of a piston, air is inhaled into another room through these first airstream ways, the second airstream way, and a concavity. moreover, a sliding operation of a piston -- a concavity -- the [the first airstream way and] -- when it separates from the position which is open for free passage on a 2 airstream way, while another room has the free passage status that it is under [atmospheric-air] receiving intercepted and defluxion of the air to the inside of the atmospheric air is prevented from an air chamber, the air in another room is pressurized in connection with a down of a piston

[0017] When the inside of another room changes into the negative pressure status, a check valve opens, and in invention according to claim 4, air is inhaled into another room out of the atmospheric air through an air-suction-system way. Moreover, when the pressure in another room becomes high, a check valve is closed and regurgitation of the air to the inside of the atmospheric air is prevented from another room.

[0018] In invention according to claim 5, when a gaseous mixture flows into another room through the inside of a path, as for this gaseous mixture, the mixture with the air in another room is suppressed by the straightening vane. for this reason, scavenging air -- the not the status but status that it dissociated that the air which flows into a cylinder from a hole, and the gaseous mixture were mixed -- becoming -- air -- the occasion -- it flows in the order of a gaseous mixture

[0019]

[Example] The first example of this invention is explained based on the drawing 1 and the drawing 2. the exhaust hole 15 opened and closed by this piston 14 when the cylinder 13 is being fixed to the upper part of a crank case 12, and it is prepared free [sliding of a piston 14] in a cylinder 13 and a piston 14 slides on a cylinder 13, and scavenging air -- a hole 16 and inhalation of air -- the hole 17 is formed here -- the aforementioned inhalation of air -- a hole 17 -- passage 18 -- minding -- a carburetor 19 -- open for free passage -- the aforementioned exhaust hole 15 -- a muffler (not shown) -- minding -- the inside of the atmospheric air -- open for free passage -- the aforementioned scavenging air -- the hole 16 is open for free passage in the another room mentioned later. In addition, the air cleaner 20 is connected to the aforementioned carburetor 19.

[0020] the scavenge air passage 24 which the another room 23 located in the outside of the crank case 22 where a crankshaft 21 etc. is arranged, and this crank case 22 is formed in the aforementioned crank case 12, and formed another room 23 in the wall of the aforementioned cylinder 13 -- minding -- the aforementioned scavenging air -- the hole 16 is open for free passage. On the other hand, the aforementioned crank case 22 and the aforementioned another room 23 are opened for free passage by the path 25, and the throttle valve 26 is formed all over this path 25. Furthermore, while flowing of the gaseous mixture which flows into another room 23 from the

inside of a crank case 22 through this path 25 is rectified, the straightening vane 27 of the honeycomb structure for suppressing the mixture with the air in another room 23 is formed in the position close to the aforementioned path 25 in the aforementioned another room 23. in addition, the aforementioned path 25 -- another room 23 and scavenging air -- it is formed in the position distant from the aforementioned scavenge air passage 24 which opens a hole 16 for free passage moreover -- while the aforementioned throttle-valve 26 makes the opening of a path 25 small to the timing to which a piston 14 goes up -- a piston 14 -- downing -- scavenging air -- it is controlled to enlarge the opening of a path 25 to the timing by which a hole 16 is punctured, and the timing which gets mixed up

[0021] The first airstream way 28 which an end opens for free passage in the atmospheric air through the aforementioned air cleaner 20 in the wall of the aforementioned cylinder 13, and the other end next punctures into the aforementioned cylinder 13, The second airstream way 29 which an end opens for free passage in the aforementioned another room 23 in the position which deserted the aforementioned path 25, and the other end punctures into the aforementioned cylinder 13 is formed. When the aforementioned piston 14 slides to the predetermined position near the top dead center, the concavity 30 which makes these first airstream ways 28 and the second airstream way 29 open for free passage is formed in the periphery side of the aforementioned piston 14. And of these first airstream ways 28, the second airstream way 29, and the concavity 30, when the inside of the aforementioned crank case 22 and the aforementioned another room 23 changes into the negative pressure status, the air-suction-system way 31 which inhales air is formed into the aforementioned another room 23 out of the atmospheric air. In addition, all over the aforementioned first airstream way 28, the throttle valve 32 for adjusting the air content which flows into the aforementioned another room 23 is formed.

[0022] In such a configuration, the gaseous mixture by which the piston 14 shows the status that it went up to the position just before a top dead center, and drawing 1 was compressed into the cylinder 13 exists. and the compression in a cylinder 13 -- when a gaseous mixture is lit by the ignition plug 33, an explosion arises within a cylinder 13 and it moves to the stroke to which a piston 14 downs in addition -- the time of a piston 14 going up to an abbreviation top dead center -- the inside of a crank case 22 -- inhalation of air -- it fills up with the gaseous mixture inhaled from the hole 17, and fills up with the air inhaled from the air-suction-system way 31 in another room 23

[0023] If a piston 14 starts a down by explosion within a cylinder 13, it will shift from the position which the position of a concavity 30 opens for free passage to the first airstream way 28 and the second airstream way 29 first, and a free passage of another room 23 and the inside of the atmospheric air will be lost. Moreover, when a piston 14 downs, while the gaseous mixture in a crank case 22 is pressurized, the pressure in a crank case 22 is transmitted into another room 23 through a path 25, and the air in another room 23 is also pressurized.

[0024] If a piston 14 downs further, puncturing of an exhaust hole 15 will be started and the combustion gas in a cylinder 13 will be discharged into the atmospheric air through a muffler from an exhaust hole 15. furthermore, timing after starting puncturing of an exhaust hole 15 -- scavenging air -- the air by which puncturing of a hole 16 was started and it was pressurized in another room 23 -- a scavenge air passage 24 -- passing -- scavenging air -- it flows into a cylinder 13 from a hole 16, and the scavenging which extrudes the combustion gas which remains in a cylinder 13 from an exhaust hole 15 is performed

[0025] on the other hand -- scavenging air -- the timing by which a hole 15 is punctured, and the timing which gets mixed up -- the opening of a throttle valve 26 -- large -- becoming -- the air in another room 23 -- scavenging air -- the gaseous mixture which the gaseous mixture in a crank case 22 flowed into another room 23 through the path 25 in connection with flowing into a cylinder 13 from a hole 16, and flowed into another room 23 -- this another room 23 and scavenge air passage 24 -- passing -- scavenging air -- it flows into a cylinder 13 from a hole 16 In addition, since the straightening vane 27 is formed in the position close to the path 25 in another room 23 when the gaseous mixture in a crank case 22 flows into another room 23 through a path 25, by this straightening vane 27, the viscous drag which acts on the gaseous mixture which flows into

another room 23 increases, and the mixture with the air in another room 23 is suppressed. therefore, scavenging air -- the not the status but status that it dissociated that the air which flows into a cylinder 13 from a hole 16, and the gaseous mixture were mixed -- becoming -- air -- the occasion -- it flows in the order of a gaseous mixture

[0026] here -- an exhaust hole 15 and scavenging air -- the time of a hole 16 being punctured and scavenging air of combustion gas being performed -- first -- scavenging air -- into a cylinder 13, air flows from a hole 16, and, subsequently a gaseous mixture flows Therefore, the air which flowed into the cylinder 13 previously is discharged from an exhaust hole 15 with combustion gas, and since an exhaust hole 15 is closed to this inflow timing and the timing which gets mixed up when a gaseous mixture flows into a cylinder 13 after air, the blow-by phenomenon in which a gaseous mixture is discharged into the atmospheric air from an exhaust hole 15 does not happen. And in order to ensure scavenging air of combustion gas, it is enabled to make late hole-closing timing of an exhaust hole 15, and it will contribute to the enhancement in an output of an engine greatly by the ability ensuring scavenging air of combustion gas. And the futility of a propellant is lost while the amount of HC which is a non-burned component in exhaust gas is reduced.

[0027] the time of going up to near the top dead center, as it moves to the stroke in which the piston 14 which downed to the bottom dead point next goes up and it is shown in drawing 1 -- inhalation of air -- while a hole 17 is punctured, a concavity 30 counters the first airstream way 28 and the second airstream way 29, and another room 23 is opened for free passage in the atmospheric air through an air cleaner 20 and the gaseous mixture formed with the carburetor 19 since this negative pressure status had traveled also to another room 23 through the path 25 while the inside of a crank case 22 will be in the negative pressure status, when a piston 14 goes up near the top dead center -- inhalation of air -- while it is inhaled from a hole 17 to a crank case, air is inhaled into another room 23 from the air-suction-system way 31 In addition, when a piston 14 goes up, while the opening of a throttle valve 26 is small and the negative pressure status in a crank case 22 is transmitted to another room 23 by the path 25, it is suppressed that the gaseous mixture with which the gaseous mixture which flowed into another room 23 in the last stroke was returned into the crank case 22, and was filled up into the crank case 22 flows into another room 23. Therefore, as shown in drawing 1 , when a piston 14 goes up to an abbreviation top dead center, it will be in the status that filled up with the gaseous mixture in the crank case 22, and it filled up only with air in another room 23.

[0028] In addition, in this example, although what formed another room 23 in the crank case 12 was mentioned as the example and explained, you may form this another room 23 separately from a crank case 12.

[0029] Moreover, although the thing of a honeycomb structure was mentioned as the example and explained as a straightening vane 27, you may be the thing of the structure which wound sheet metal spirally.

[0030] Subsequently, the second example of this invention is explained based on drawing 3 . In addition, the same sign shows the fraction explained in the drawing 1 and the drawing 2 , and the same fraction, and they also omit an explanation. this example forms the air-suction-system way 34 where the other end was opened for free passage in the atmospheric air through the air cleaner 20 in the wall of a cylinder 13 while an end is opened for free passage by another room 23, and it forms the check valve 35 which permits only flowing of the air into another room 23 out of the atmospheric air all over this air-suction-system way 34.

[0031] In such a configuration, when the inside of the crank case 22 and the another room 23 changes into the negative pressure status in connection with elevation of a piston 14, a check valve 35 is opened and the air in the atmospheric air is inhaled into another room 23 through the inside of the air-suction-system way 34. Here, while the air-suction-system way 34 which opens another room 23 and the inside of the atmospheric air for free passage is formed as structure for inhaling air into another room 23, in order to form a check valve 35 in this air-suction-system way 34, it has easy structure. furthermore, the time of inhalation of the air into another room 23 coming to be performed over the whole abbreviation in the stroke which goes up a piston 14 for a long time, and the charging efficiency of the air into another room 23 improving, and scavenging combustion gas

-- scavenging air -- the vigor of the air which flows into a cylinder 13 from a hole 16 becomes strong, and the scavenging-air performance of exhaust gas improves

[0032]

[Effect of the Invention] In the two-cycle engine of a crank-case compression equation with which invention according to claim 1 pressurizes the gaseous mixture inhaled while the gaseous mixture was inhaled into the crank case using the pressure fluctuation in the crank case accompanied by sliding of a piston, and supplies it into a cylinder as mentioned above. The another room where a pressure is changed in connection with the pressure fluctuation in the aforementioned crank case while a path is open for free passage into the aforementioned crank case is prepared. When the inside of the aforementioned crank case changes into the negative pressure status, while the air-suction-system way which inhales air is prepared into the aforementioned another room out of the atmospheric air in the position distant from the aforementioned path -- the aforementioned another room and scavenging air, since the scavenge air passage which opens a hole for free passage was established in the position which deserted the aforementioned path an exhaust hole and scavenging air, in case a hole is punctured and the combustion gas in a cylinder is scavenged. It flows into a cylinder from a hole. First, the air inhaled and pressurized in another room -- the inside of a scavenge air passage -- passing -- scavenging air -- subsequently while the gaseous mixture in a crank case flows into another room from passage -- the inside of a scavenge air passage -- passing -- scavenging air, in order to flow into a cylinder from a hole. Being discharged into the atmospheric air from an exhaust hole with combustion gas in connection with scavenging air of combustion gas becomes only the air which flowed into the cylinder previously. Since an exhaust hole is closed to this inflow timing and the timing which gets mixed up when a gaseous mixture flows into a cylinder after air, The blow-by phenomenon in which a gaseous mixture is discharged into the atmospheric air from an exhaust hole can be prevented. Therefore, while the clean engine which decreased HC which is a year-of-the-Sheep component in exhaust gas can be obtained, the futility of a propellant can be lost and mpg can be raised. Furthermore, while hole-closing timing of an exhaust hole can be made into the late timing by which all the air that flowed into the cylinder is discharged from an exhaust hole, scavenging air of combustion gas can be ensured. It has the effect of the grade which can aim at enhancement in an output of an engine by ensuring scavenging air of combustion gas.

[0033] Invention according to claim 2 is set to invention according to claim 1 as mentioned above. While an opening is made small to the timing to which a piston goes up -- the aforementioned piston -- downing -- scavenging air, since the throttle valve which enlarges an opening to the timing by which a hole is punctured, and the timing which gets mixed up was prepared all over the path. The opening of a throttle valve at the time of elevation of a parvus piston. While the negative pressure status in a crank case can be transmitted to another room from a path. It can prevent that the gaseous mixture with which it filled up in the crank case while it could consider as the status that returned the gaseous mixture which flowed into another room in the last stroke into the crank case, and it filled up only with air into another room flows into another room. Moreover, a piston -- downing -- scavenging air -- scavenging air performed through another room and a scavenge air passage by enlarging the opening of a throttle valve to the timing by which a hole is punctured, and the timing which gets mixed up -- it has the effect of the grade into which the gaseous mixture into a cylinder can be made to flow quickly from a hole.

[0034] Invention according to claim 3 is set to invention according to claim 1 or 2 as mentioned above. The second airstream way which the first airstream way and end which an end opens for free passage in the atmospheric air and the other end punctures into the aforementioned cylinder open for free passage to an air chamber, and the other end punctures into a cylinder is formed in the wall of the aforementioned cylinder. Since the concavity which makes the aforementioned first airstream way and the aforementioned second airstream way open for free passage was formed in the periphery side of the aforementioned piston and the airstream ON way was formed by these first airstream ways, the second airstream way, and the concavity when a piston slid to a predetermined position. It can control inhaling air into another room by sliding of a piston, and has the effect of the grade which can prevent occurrence of the trouble by the deviation of the timing.

which inhales air.

[0035] Since invention according to claim 4 prepared the check valve which permits only flowing of the air which goes into another room out of the atmospheric air in invention according to claim 1 or 2 as mentioned above all over the air-suction-system way The structure for inhaling air into another room can be simplified. again while air can be inhaled into another room in the large domain in the stroke which goes up a piston, therefore the filling factor of the air into another room is raised -- scavenging air -- it has the effect of the grade which can strengthen vigor of the air which flows into a cylinder from a hole, and can raise scavenging-air nature

[0036] As mentioned above, since invention according to claim 5 prepared the straightening vane in the fraction in another room which approached the path at least in invention according to claim 1, 2, 3, or 4 When the gaseous mixture in a crank case flows into another room through a path, the mixture with the gaseous mixture and air in another room can be suppressed by the rectification of a straightening vane. therefore, scavenging air -- the not the status but status that it dissociated mixed in the air which flows into a cylinder from a hole, and the gaseous mixture -- air -- the occasion -- it has the effect of the grade which can be made to be able to flow in the order of a gaseous mixture, therefore can prevent the blow-by phenomenon of a gaseous mixture to an authenticity much more

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CLAIMS

[Claim(s)]

[Claim 1] In the two-cycle engine of the crank-case compression equation which pressurizes the gaseous mixture inhaled while the gaseous mixture was inhaled into the crank case using the pressure fluctuation in the crank case accompanied by sliding of a piston, and is supplied into a cylinder. The another room where a pressure is changed in connection with the pressure fluctuation in the aforementioned crank case while a path is open for free passage into the aforementioned crank case is prepared. When the inside of the aforementioned crank case changes into the negative pressure status, while the air-suction-system way which inhales air is prepared into the aforementioned another room out of the atmospheric air in the position distant from the aforementioned path -- the aforementioned another room and scavenging air -- the two-cycle engine characterized by establishing the scavenge air passage which opens a hole for free passage in the position which deserted the aforementioned path

[Claim 2] while an opening is made small to the timing to which a piston goes up -- the aforementioned piston -- downing -- scavenging air -- the two-cycle engine according to claim 1 characterized by preparing the throttle valve which enlarges an opening to the timing by which a hole is punctured, and the timing which gets mixed up all over a path

[Claim 3] The second airstream way which the first airstream way and end which an end opens for free passage in the atmospheric air and the other end punctures into the aforementioned cylinder open for free passage to an air chamber, and the other end punctures into a cylinder is formed in the wall of the aforementioned cylinder. The concavity which makes the aforementioned first airstream way and the aforementioned second airstream way open for free passage when a piston slides to a predetermined position is formed in the periphery side of the aforementioned piston. The two-cycle engine according to claim 1 or 2 characterized by forming an airstream ON way by these first airstream ways, the second airstream way, and the concavity.

[Claim 4] The two-cycle engine according to claim 1 or 2 characterized by preparing the check valve which permits only flowing of the air which goes into another room out of the atmospheric air all over an air-suction-system way.

[Claim 5] The two-cycle engine according to claim 1, 2, 3, or 4 characterized by preparing a straightening vane in the fraction in another room which approached the path at least.

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